

REMARKS

Claims 1-12 are pending in this application. Favorable reconsideration of the application in light of the following comments and accompanying Declaration is respectfully solicited.

I. Rejections Under 35 U.S.C. § 103(a)

In section 4 of the Office Action, claims 1-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent App. Pub. No. 2002/0021725 (Abe) in view of U.S. Patent No. 2001/0050531 (Ikeda). In section 6 of the Office Action, claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Abe in view of U.S. Patent No. 6,885,076 (Honda). Applicants respectfully traverse.

Independent claim 1 recites, *inter alia*,

a two-beam semiconductor element having first and second semiconductor laser elements that can be driven independently and that are formed integrally on a substrate; and

a submount having, mounted on a front part thereof, the two-beam semiconductor laser element with a light-emitting face thereof directed forward and having **first and second electrode pads connected to electrodes of the first and second semiconductor laser elements** by being kept in contact therewith,

...

wherein the first and second electrode pads are formed to extend farther behind the two-beam semiconductor laser element, and are wire-bonded behind the two-beam semiconductor laser element.

In the rejection of claim 1, page 3 of the Office Action asserts

Abe discloses . . . wherein the first and second electrode pads are formed to extend farther behind the two-beam semiconductor (it's inherent that electrode 13a has been extended behind the laser diode 14a **as lead 23 is taught to be connected to both the first and second laser diodes**, shown in figure 8A), and are wire-bonded behind the two-beam semiconductor laser element (shown in figure 8A) (paragraph [0131] – paragraph [0137]).
(*emphasis added*)

As noted on page 2, lines 5-7 of the Office Action, Applicants have previously noted that Abe discloses electrode pads 13a located to the sides of the first and second diodes, and that Abe does not disclose the limitations recited in the last paragraph of claim 1. In response to Applicants' observations, section 2 of the Office Action asserts:

the lead 23 is connected to both of the first and second laser diodes or the PIN diode 12. As shown in figure 8A, the logical configuration for the lead 23 to be connected to both of the first and second laser diodes is that the electrode 13a must extend backward; therefore, Abe inherently discloses the limitations of "the first and second electrode pads are formed to extend farther behind the two-beam semiconductor laser element, and are wire-bonded behind the two-beam semiconductor laser element."

Applicants respectfully maintain that Abe does not disclose, or even suggest, at least the limitations recited in the last paragraph of claim 1. In support of Applicants' position, a Declaration Under 37 C.F.R. § 1.132 by coinventor Yasuhiro Watanabe, an expert with 27 years of professional experience in the field of design and development of semiconductor laser devices (Decl. § 4), accompanies this filing. The Declaration provides evidence that one of one of ordinary skill in the art would the Office Action incorrectly describes what is disclosed by Abe. Accordingly, the rejection lack factual support required to sustain the asserted rejections under 35 U.S.C. § 103(a).

A. Abe does not completely or accurately describe the features relied upon by the Office Action

The Office Action relies on Abe, FIG. 8 and paragraph [0137] in support of its assertion that Abe inherently discloses the limitations recited in the last paragraph of claim 1. Abe, paragraph [0137] states, in its entirety:

Furthermore, a terminal 22 is provided passing through the base 1 and connected by a lead 23 to the above first and second laser diodes (LD1 and LD2) or to the PIN diode 12. A drive power is supplied to the respective diodes.

The Office Action seeks to apply a literal reading of the above paragraph, in conjunction with the incomplete labeling of features in Abe, FIG. 8A, to assert that the individual lead labeled 23 in FIG. 8A (corresponding to feature 23d in drawing included section 11 of the Declaration¹), “is taught to be connected to both the first and second laser diodes” (Office Action, page 3, lines 10-12). However, this position is based on a disclosure, presented in Abe, FIG. 8A and paragraph [0137], which provides an inaccurate and incomplete description of the device disclosed by Abe. *See* Decl. §§ 8-10.

One of skill in the art, in view of the *complete* disclosure, would have understood that leads 23b and 23c (as labeled in section 11 of the Declaration, and which are bonded at positions adjacent to monolithic semiconductor laser 14a) are connected to the laser diodes, whereas lead 23d is connected to PIN diode 12, with leads 23a and 23e, which are commonly connected to protruding portion 21a, respectively connected to features 14a and 12. *See* Decl., § 11. The Examiner’s position fails to address that, in view of features 13b and 13c in FIG. 7, it is clear that leads 23b and 23c are connected to laser diodes LD1 and LD2 – not lead 23d. *See* Decl., § 11; *see also* Decl., §§ 16 and 18. Other inconsistencies between Abe, paragraph [0137] and the remainder of its disclosure further demonstrate the error of the position taken by the Office Action. *See* Decl. §§ 13-15. As explained in section 15 of the Declaration:

To one of skill in the art, the inconsistency of paragraph [0137] with the remainder of Abe would have led to the conclusion that paragraph [0137] is simply a terse and inaccurate description of the device shown in FIG. 8A. In particular, one of skill in the art would have recognized that the single lead

¹ As Abe, FIG. 8A does not label all of the features depicted therein, the Declaration provides a copy of Abe, FIG. 8A with additional annotations to facilitate discussion of the drawing. For example, the individual wire bearing label 23 in the original drawing is labeled 23d in the drawing included in section 11 of the Declaration, with the other 4 leads shown the drawing provided with individual labels 23a, 23b, 23c, and 23e. Likewise, each of the 4 terminals present on the back of the can passage (of which 3 pass through to the front of base 21) are presented with individual labels 22a-d. *For the sake of clearly identifying individual features shown in Abe, FIG. 8A, Applicants respectfully request that any further discussions of Abe, FIG. 8A make use of the labels presented in section 11 of the Declaration.*

labeled 23 in FIG. 8A is connected to PIN diode 12, and not to either, let alone both, of laser diodes LD1 and LD2.

Thus, Abe does not disclose at least the limitations of the last paragraph of claim 1.

B. Ikeda further demonstrates the practice in the prior art of attaching bonding wires to electrodes at positions lateral to a semiconductor laser beam element

The Office Action cites Ikeda as an example within the prior art of “a two-beam semiconductor laser device . . . with no photo-detector provided on the submount” (Office Action, page 3, lines 15-19). In fact, Ikeda shows the same configuration of two bonding wires each connecting a terminal to a respective laser diode seen in Abe. As discussed in sections 16-17 of the Declaration, in both references bonding wires corresponding to the laser diodes are attached at positions lateral to their respective laser diode. *See* annotated Abe, FIG. 8A shown in section 11 of Declaration, features 23b and 23c (*see also* Abe, FIG. 7, features 13b and 13c (disclosing same monolithic semiconductor laser 14a shown in FIG. 8A)); Ikeda, FIG. 5, features 6b and 6c (NOTE: labels 5c and 6c appear to be reversed in Ikeda, FIG. 5). The correspondence between Abe and Ikeda would have been quite clear to one of skill in the art, and further demonstrates that the Abe device likewise fails to disclose or suggest the limitations recited in the last paragraph of claim 1. *See* Decl., §§ 16-17.

C. This application’s description of background art shows essentially the same device disclosed in Abe

As discussed in sections 19-20 of the Declaration, the device shown in FIGS. 6 and 7 of this application, and described in the “Background Art” portion of the specification, is essentially the same as the Abe device. As can be seen in the drawings provided on page 6 of the declaration, the correspondence between the two devices is readily apparent. As is explicitly described in the specification corresponding to FIGS. 6 and 7 of this application, and shown in FIGS. 7 and 8A of Abe, bonding wires corresponding to the laser diodes LD1 and LD2 are

bonded at positions lateral to, rather than behind, the two-beam semiconductor laser element. Thus, this application's description of the background art shown in FIGS. 6 and 7 further demonstrates that the Abe device fails to disclose or suggest the limitations recited in the last paragraph of claim 1.

D. Abe does not inherently disclose an electrode 13a extending behind two-beam semiconductor laser element 14a

Page 3, lines 10-12 of the Office Action asserts "it's inherent that electrode 13a has been extended behind the laser diode 14a as lead 23 is taught to be connected to both the first and second laser diodes." *See also* Office Action, page 2, lines 10-11 (discussing a configuration in which "the lead 23 [is] connected to both of the first and second laser diodes"). However, this assertion of inherency rests on the mistaken belief that Abe, paragraph [0137] discloses that the individual lead 23d (as labeled in section 11 of the Declaration) is connected to both, or even at least one of, laser diodes LD1 and LD2. As discussed above and in section 12 of the Declaration, one of skill in the art would not have understood Abe in the manner proposed by the Office Action. Instead, as explained in section 12 of the Declaration:

One of skill in the art would have understood that paragraph [0137] of Abe is not a careful and accurate description of the device shown in FIG. 8A, and the text refers to the terminals 22a-22c in the aggregate as "a terminal 22" and leads 23b, 23c, and 23d in the aggregate as lead 23. One of skill in the art would have understood that the use of the singular article "a" is inaccurate, and that Abe does not disclose, using the reference numerals shown above, that the single lead 23d is [connected] to both first and second laser diodes LD1 and LD2. Page 2, line 10 of the Office Action incorrectly asserts that such a configuration is "shown in figure 8A" – instead, paragraph [0137] fails to accurately describe what is shown in FIG. 8A.

The claim of inherency asserted by the Office Action rests upon an incorrect description of what is disclosed in Abe. Abe does not disclose, either expressly or inherently, the limitations recited in the last paragraph of claim 1, nor does it suggest or otherwise render obvious these

limitations. Neither Ikeda nor Honda bridges this gap between claim 1 and Abe. Thus, claim 1 is not obvious in view of the cited art. Accordingly, Applicants respectfully request withdrawal of the rejections of independent claim 1 and dependent claims 2-12, as “dependent claims are nonobvious if the independent claims from which they depend are nonobvious.” *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992); *accord* MPEP § 2143.03 (“If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious”).

II. Clarification of Record

Section 2 of the Office Action asserts it is “admitted by the Applicant[s] the lead 23 is connected to both of the first and second laser diodes or the PIN diode 12.” Regardless of any previous remarks which Examiner may construe to the contrary, Applicants expressly reject Examiner’s description of the teachings of Abe. In particular, and as discussed above, Applicants reject Examiner’s position that individual lead 23d (as labeled in section 11 of the Declaration) is connected to both of the first and second laser diodes. Applicants’ current understanding of the device disclosed by Abe is that leads 23a, 23b, and 23c are connected to monolithic semiconductor laser 14a, with leads 23b and 23c connected via electrodes 13a shown in FIG. 7 and bonded at positions lateral to, and not behind, monolithic semiconductor laser 14a, and that leads 23d and 23e are connected to PIN diode 12. *Accord* Decl., §§ 11-12. The Declaration accompanying this response provides expert testimony that one of skill in the art would have understood Abe consistent with Applicants’ position, or at the least not in a manner such that lead 23d is connected to either or both of laser diodes LD1 and LD2.

III. Conclusion

In view of the foregoing remarks and accompanying declaration, Applicants respectfully submit that the instant application is in condition for allowance, and respectfully request the Examiner's favorable reconsideration as to allowance, and withdrawal of any rejections of the pending claims. If the Examiner believes a telephone conference would expedite prosecution of this application, please contact the Applicants' representative listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Attachment: Declaration Under 37 C.F.R. § 1.132

Respectfully submitted,

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